

## CLAIMS

1. A foam forming die comprising:

an inlet for inserting a molten resin containing a foaming agent from an extruder,

5 a hollow portion formed so as to permit the molten resin inserted to spread in the widthwise direction, and

a channel for discharging the molten resin that has passed through the hollow portion and is spread in the widthwise direction, wherein

10 one end of the channel is narrowed by two rotatable bodies to form a discharge portion, the two rotatable bodies having an outer periphery substantially in the form of a true circle in cross section and being disposed in parallel with their axes extending in the widthwise direction, and

15 the two rotatable bodies can rotate in the molten resin discharging direction.

2. A foam forming die according to Claim 1, wherein the relationship between the height  $T$  of the channel and the smallest gap  $t$  between the two rotatable bodies satisfies  $T > 2t$ , and the relationship between the radius  $R$  of at least one rotatable body and the smallest gap  $t$  satisfies  $R \geq 15t$ .

20

3. A foam forming die comprising:

an inlet for inserting a molten resin containing a foaming agent from an extruder,

a hollow portion formed so as to permit the molten  
5 resin inserted to spread in the widthwise direction, and

a channel for discharging the molten resin that has passed through the hollow portion and is spread in the widthwise direction, wherein

one end of the channel is narrowed by a rotatable body  
10 to form a discharge portion, the rotatable body having an outer periphery substantially in the form of a true circle in cross section and being disposed with its axis extending in the widthwise direction, and

the rotatable body can rotate in the molten resin  
15 discharging direction.

4. A foam forming die according to Claim 3, wherein the relationship between the height  $T$  of the channel and the smallest gap  $t$  between the inner wall surface of the channel and the outer  
20 peripheral surface of the rotatable body satisfies  $T > 2t$ , and the relationship between the radius  $R$  of the rotatable body and the smallest gap  $t$  satisfies  $R \geq 15t$ .

5. A foam forming die for forming a plurality of layers comprising:

a plurality of inlets for inserting a molten resin containing a foaming agent from an extruder,

5 a hollow portion formed so as to permit the molten resin inserted from the respective inlets to spread in the widthwise direction, and

a channel for discharging the molten resin that has joined after passing through the respective hollow portions,  
10 and is spread in the widthwise direction, wherein

one end of the channel is narrowed by two rotatable bodies to form a discharge portion, the two rotatable bodies having an outer periphery substantially in the form of a true circle in cross section and being disposed in parallel with axes  
15 extending in the widthwise direction, and

the two rotatable bodies can rotate in the molten resin discharging direction.

6. A foam forming die according to any one of Claims 1, 3, and  
20 5 further comprising a rotation adjusting means for increasing or decreasing the speed of rotation or torque of the rotatable body.

7. A foam forming die according to any one of Claims 1, 3, and 5, wherein the rotatable body is provided with projections extending from an outer peripheral surface thereof diametrically outward over the entire width.

5

8. A foam forming die according to any one of Claims 1, 3, and 5 further comprising a forming device for forming a foam-formed article discharged from the discharge portion into a predetermined shape at the downstream side of the discharge portion.

10

9. A method of producing a foam-formed article, the method comprising forming a molten resin into a sheet, film or plate-like foam-formed article with the use of a foam forming die according to any one of claims 1, 3, and 5.

15

10. A method of producing a foam-formed article, the method comprising forming a molten resin into a profiled foam-formed article with the use of a foam forming die according to any one of claims 1, 3, and 5.

20

11. A method of producing a foam-formed article comprising:  
producing a formed article in the form of a

solid-solution wherein 5% by weight or more of the foaming agent contained in the article is unevaporated, by cooling a rotatable body using a foam-forming die according to any one of Claims 1, 3, and 5, and

- 5                   producing a foam-formed article by heating the formed article.